

Clinical pathway: Snake bite envenomation in Victoria

This clinical pathway applies ONLY to community-acquired snake bites in patients who are not snake handlers. Specific advice regarding bites in snake handlers and from exotic snakes should be obtained from a clinical toxicologist (e.g. Poisons Centre 13 11 26).

Clinical patterns

Snake	Coagulopathy	Neurotoxicity	Myotoxicity	Systemic symptoms	Cardiovascular effects	TMA	Antivenom
Brown	VICC	Rare and mild	-	<50%	Collapse (33%) Cardiac arrest (5%)	10%	Brown
Tiger	VICC	Uncommon	Uncommon	Common	Rare	5%	Tiger
Red-bellied black	Anticoagulant	-	Uncommon	Common	-	-	Tiger

VICC = Venom-induced consumptive coagulopathy (abnormal INR, fibrinogen very low, d-dimer high)

Anticoagulant = aPPT 1.5–2.5 x normal ± minor elevation INR. D-dimer and fibrinogen usually normal

TMA = thrombotic microangiopathy. Fragmented red blood cells on blood film, thrombocytopenia and a rising creatinine

Indications for antivenom: seek advice from a clinical toxicologist (e.g. Poisons Centre 13 11 26)

- Neurotoxic paralysis (e.g. ptosis, ophthalmoplegia, limb weakness, respiratory effects)
- Significant coagulopathy (e.g. unclottable blood, INR>1.3, prolonged bleeding from wounds and venepunctures)
- History of unconsciousness, collapse, convulsions or cardiac arrest

There are a number of relative indications for antivenom that require expert interpretation. It is strongly recommended that significant systemic symptoms or any abnormality of INR, APTT, fibrinogen, d-dimer, full blood count (leucocytosis, evidence of TMA) or CK >1000 is discussed with a clinical toxicologist to determine if antivenom is required.

Choice of antivenom: seek advice from a clinical toxicologist (e.g. Poisons Centre 13 11 26)

If there is a delay in contacting a clinical toxicologist and there is clear indication for antivenom, administer 1 vial of tiger snake antivenom and 1 vial of brown snake antivenom.

It is strongly recommended that all cases of envenomation be discussed with a toxicologist to guide treatment and appropriate disposition.

Prepare to manage anaphylactoid reactions

Tick if completed

- Critical care area with monitoring
- IV line in situ
- Further IV fluids available
- Adrenaline available

Preparation and administration of antivenom

Tick if completed

- Dilute in 100–500mls of isotonic saline
- Administer over 15-30 minutes
- Release pressure bandage immobilisation **after** antivenom has been administered

Monitor progress: seek advice from a clinical toxicologist (e.g. Poisons Centre 13 11 26)

Tick if completed

Monitor, investigate and treat for complications such as occult bleeding, electrolyte abnormality (e.g. hyperkalaemia, developing renal impairment)

6 hours post anti-venom: INR, APPT, fibrinogen, d-dimer, EUC, CK and FBE

If not improving/unsure, seek advice from a clinical toxicologist (e.g Poisons centre 13 11 26)

12 hours post anti-venom: INR, APPT, fibrinogen, d-dimer, EUC, CK and FBE

If not improving/ unsure, seek advice from a clinical toxicologist (e.g Poisons centre 13 11 26)

NOTE: Coagulopathy may not begin to improve until about 12 hours. Persistent coagulopathy is not an indication for additional antivenom. Seek advice if concerned.		
Daily thereafter until resolved: INR, APPT, fibrinogen, d-dimer, EUC, CK and FBE		
Location	List criteria	
ED observation unit		
Ward		
ICU/ HDU		
Transfer		
Criteria for discharge during daytime (do not discharge at night): seek advice from a clinical toxicologist (e.g. Poisons Centre 13 11 26)		
Uncomplicated myotoxicity and mild neurotoxicity	Once clinical features are resolving and blood tests, at least 12 hours post antivenom, are normalising	
VICC	INR, APTT, creatinine and platelet count normalising	
Discharge advice		Tick if completed
Explanation of the risk of serum sickness (~30%) characterised by flu-like symptoms, fever, myalgia, arthralgia and rash developing 4–14 days post antivenom		
Letter to GP including advice regarding recognition and treatment of serum sickness		

Notes for participating emergency departments:

1. Snake venom detection kit use: This is a decision for individual health services based on local resources and experience. The role of snake venom detection kits in bites occurring in the community within Victoria who are not snake handlers is controversial, because of the narrow range of snakes that might be involved and a significant misclassification rate of tiger snake venom as brown snake venom. Use of the kits requires training and results need to be interpreted in the light of all clinical and laboratory data.

If health services decide to include the use of a snake venom detection kit in their pathway, it should be inserted under the 'Choice of anti-venom' section along with a strong recommendation/ requirement that the results are discussed with a clinical toxicologist.

2. Disposition criteria: Each health service should decide its own disposition criteria, taking into account resources, expertise and clinical risk. These should be clearly documented in the pathway.

This project was initiated and facilitated by the Emergency Care Improvement and Innovation Clinical Network (ECIICN), Commission for Hospital Improvement, Department of Health, Victoria in response to a need identified by emergency clinicians.

An expert reference group was established including clinical toxicologists and experts in management of snake bite: Professor Anne-Maree Kelly (chair), Associate Professor Geoff Isbister, Dr Shaun Greene, Professor Andis Gaudins, Dr Dino Druda, Dr Bill Nimorakiotakis. These materials were endorsed by ECIICN steering group members Prof George Braitberg and Dr Diana Badcock.

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